- 18-25 kW (61,400 - 85,300 BTU/hr.)
- Low flow activation options at 0.25 and 0.50 GPM (1.0 and 1.9 LPM)
- Certified Lead-Free Design
- Variable modulation from 0 to 100% of the rated kW
- Pressure Drop Advantage
- Standard NEMA 4 enclosure
- 3/4" connections
- Independent Safeties
- ETL and cETL certified to UL and CSA Standards
- Liquid-Cooled Solid State Relays
- Internal fusing (included) adds safety and permits single power connection

Standard Equipment

Tankless Water Heating Specifications

Laars Commercial Tankless Electric Water Heaters, Powered by Keltech™ G Series are designed to accommodate most light industrial fluid heating applications, where the demand is 18kW - 25kW and total flow is up to 15 GPM. Standard units feature .75 GPM activation with options as low as .25 GPM. NEMA 4X and explosion proof purge system options available. G Series units are 380V, 400V, 415V, 480V or 600V, 50/60 Hz, 3-Phase Delta.

Construction

Temperature Controller

The Laars PID Temperature Controller is more energy efficient and reliable than traditional microprocessors using staged elements. Power is infinitely variable, with no fixed inputs. The PID controller makes it possible to modulate the amount of power applied to the elements while also dispersing the required power evenly across all elements. This unique feature increases the product's life cycle.

Heating Element

Each heater features a heavy duty, low watt density, incoloy 800 sheathed resistive element. The Laars design ensures greater protection, durability and resistance to scaling from hard water because water is only heated when flowing; this means sediment is less likely to collect in the heat exchanger.

Solid State Relays

The liquid cooled solid state relays provide silent switching, which has a fast response and works in conjunction with the PID controller to infinitely modulate and add to the life of the heater.

Electrical

The G Series requires only one service feed per unit. Includes internal fusing as standard, which provides superior protection. Laars protects each heating element with fusing.

Cabinet Enclosure

The standard wall cabinet enclosure is NEMA 4 rated and made from 16 gauge mild steel and powder coated with ANSI 61 gray, corrosive resistant paint. The optional NEMA 4X enclosures are for harsher environments and made from 16 gauge 304 stainless steel. Optional floor standing leg kit available (LK).

Independent Safeties

The internal thermostat with auto reset high limit switch ensures that when the temperature limit is reached, the unit will power down a bank of elements; when the temperature drops back down to the set point, power is restored. The surface mounted bi-metal thermostat with manual reset acts as a fail-safe and must be manually reset before power can be restored to the elements if the temperature limit is exceeded.

Code Compliance and Certifications

Lead-Free

Products marked with the Lead-Free logo comply with the Safe Drinking Water Act (SDWA) requirements of a weighted average of less than 0.25% lead content on wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

ETL listed to UL499

ETL listed to UL 50E (Requires NEMA 4X Option)*

ETL listed to NFPA 496 (Requires EXP2 Option)*

cETL listed to CSA-C22.2 No. 88

Standard product selections contained within this document are third party CERTIFIED to NSF/ANSI 372 meeting the Lead-Free content requirement. Any product configured with custom options will be COMPLIANT with NSF/ANSI 372 meeting the Lead-Free content requirement.

* Must be specified when ordering

Product Options

Fused Disconnect Switch

Internal fused disconnect interlocks with enclosure door when energized, prohibiting access to a live cabinet. Select the FDS option for an additional level of safety and convenience at the heater location.

Ground Fault

Optional equipment protection ground fault senses leakage current to ground >1 Amp. In the event a fault is detected, this device will terminate the high voltage power supply to heating elements and disable operation of the unit. Fault status is communicated EXTERNALLY at the control interface. Personnel may also test the Ground Fault system and reset any nuisance trips without opening the cabinet.

Explosion Proof Purge System

The EXP2 option makes heaters compliant for classified areas; Class 1, Division 2, Groups A-D, T5. The Purge System requires a supply of clean instrument air or inert gas (provided by installer). This supply maintains a positive internal pressure and prevents the enclosure from filling with flammable gasses, dusts or vapors from the ambient environment. In addition to manufacturer certifications on the purge system, Laars independently tests and 3rd party certifies all finished product with EXP2 to comply with NFPA 496.

Building Management System (BMS) Integration

The D1 option has 4-20mA input and allows Building Management Systems to set temperature and view heater outlet temperature via BMS display (provided by the installer). This allows the BMS to command the temperature setting of the unit and verify unit performance with actual process values. The D1 option requires BMS input to establish a temperature setting; local adjustment of set-point per standard interface on the heater control display is not permitted.

The DC option is a RS-485 Modbus RTU and allows Building Management Systems to view heater outlet temperature and heater activation via BMS display as well as changing the temperature set-point from the BMS. This allows the BMS to command the temperature setting of the unit and verify unit performance with actual process values. Local adjustment of set-point per standard interface on the heater control display is permitted.

Alarm Selections

For critical process applications, the high/low temperature alarm (AL option) alerts you to an over or under temperature situation. The visual indicator alarm is located on the heater control panel. If the process temperature strays from the defined temperature range, an alert is sent to the controller.

Other Product Options

For additional heater options and installation accessories, reference the appropriate section at the end of this document.

Electrical Specifications for the Heater (3-Phase)

All internal fuses necessary for installation are included with the unit.

Capacity (kW)	Voltage	Maximum Amperage	Minimum AWG Wire Size*
18	480	22	10
18	600	18	10
25	480	30	8
25	600	24	10

* Based on the NEC Table 310.16 (Formerly 310.15) for 75°C insulated copper wire @ 30°C Ambient. Aluminum wire requires larger gauges.

Low Pressure Drop Advantage

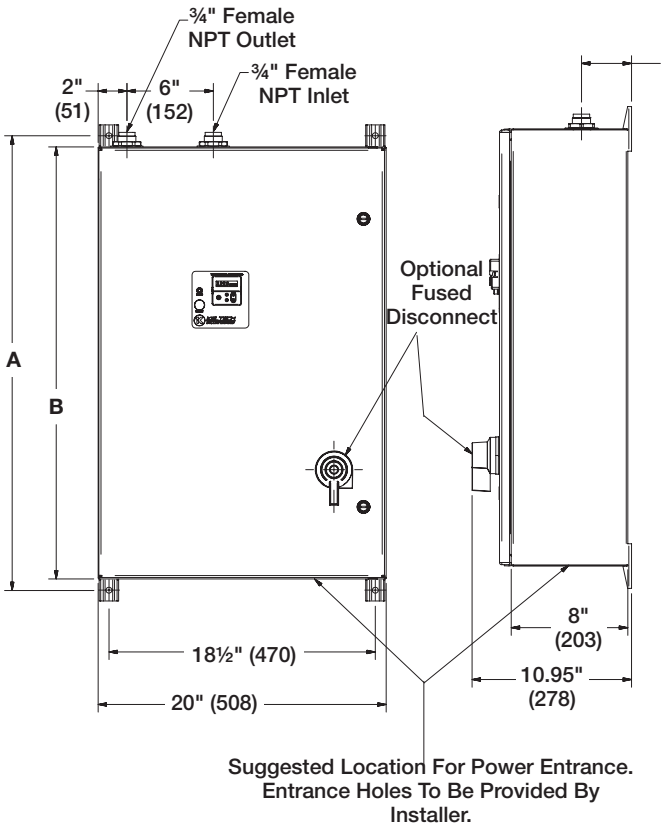
Pressure Drop**									
GPM	1	2	3	4	5	6	8	10	15
PSI	0	1	2	3	4	5	7	10	15
LPM	3.8	7.6	11.3	15.1	18.9	22.7	30.2	37.8	56.8
BAR	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.7	1.0

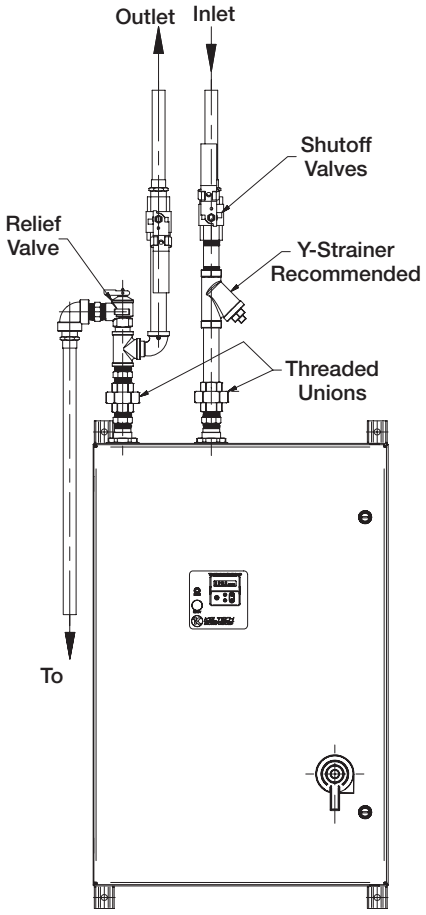
** Standard build configuration

G Series - Dimensions

Select product options shown. Other options available.

(mm)





Suggested Installation Configuration
Components provided by installer unless otherwise specified. Reference the product options sections or contact your local Manufacturer Representative for product options.

	A	B
18kW	31-1/2" (800)	30" (762)
25kW	37-1/2" (953)	36" (914)

kW Calculator

G Series: 18, 25 kW

Temperature Δ °F (°C)

Flow GPM	LPM	10° (6°)	15° (8°)	20° (11°)	25° (14°)	30° (17°)	35° (19°)	40° (22°)	45° (25°)	50° (28°)	55° (31°)	60° (33°)	65° (36°)	70° (39°)	75° (42°)	80° (44°)	85° (47°)	90° (50°)	95° (53°)	100° (56°)	105° (58°)	110° (61°)	115° (64°)	120° (67°)	125° (69°)	130° (72°)	135° (75°)	140° (78°)
0.75	2.8	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
1.0	3.8	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25	25
1.5	5.7	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25	25	25	-	-	-	-	-	-
2	7.6	18	18	18	18	18	18	18	18	18	18	18	25	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-
3	11.3	18	18	18	18	18	18	18	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	15.1	18	18	18	18	18	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	18.9	18	18	18	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	22.7	18	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	26.5	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	30.2	18	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	34.0	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	37.8	18	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	56.8	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sizing for the proper flow rate is important. If the temperature rise requirements exceed a single G Series, consider using multiple G Series units. Please contact your Laars Representative for additional product information.

How to Size a Heater

1. Calculate Delta-T (ΔT).
   Set point temp - coldest ground water temp = ΔT ΔT = _____
2. Select kW required by using chart or formula below.
   Peak demand in GPM x ΔT x .1465 = kW kW = _____
3. Confirm voltage and phase available on site. Voltage and Phase = _____
4. Confirm minimum flow. Minimum Flow = _____

LAARS Heating Systems Company
POWERED BY KELTECH

G Series (Formerly C1N Series)
Light Industrial Heaters
Tankless Electric Water Heating Solutions

1 Brand — **L** = Laars

2 3 4 5 Category — **C T E G** = Commercial Tankless Electric G Series

6 7 8 Power — **0 1 8** = 18kW; **0 2 5** = 25kW

9 Voltage *Three Phase*
- **S** = 480
- **T** = 600
- **M** = 380*
- **N** = 400*
- **P** = 415*
- *Downrated from 480V

10 Enclosure Construction
- **D** = NEMA 4 - Standard
- **E** = NEMA 4X 304 SSTL
- **K** = NEMA 4 & Explosion proof EXP2
- **M** = NEMA 4 & LK
- **N** = NEMA 4X 304 & EXP2
- **R** = NEMA 4X 304 & LK

LK not available with EXP2

11 Heat Exchanger Construction
- **X** = Standard
- **T** = TE - Teflon Coated HX
- **F** = TE2 - XF Coated HX

12 Control
- **X** = Standard
- **E** = AL- Process Temp Alarm
- **F** = D1- 4-20mA input
- **G** = DC- RS-485 Modbus RTU

13 Electrical
- **X** = Standard
- **F** = FDS - Internal Fuse Disconnect
- **G** = GF - Ground Fault Package
- **J** = FDS & GF

14 Temperature Setpoints
- **X** = Standard (0.75 GPM Activation & 160F)
- **1** = T170 High Temp
- **2** = T180 High Temp
- **3** = T190 High Temp
- **4** = T200 High Temp
- **D** = L25-0.25 GPM Activation
- **E** = L5-0.5 GPM Activation
- **K** = T170 & L25
- **L** = T180 & L25
- **M** = T190 & L25
- **N** = T200 & L25
- **P** = T170 & L5
- **R** = T180 & L5
- **S** = T190 & L5
- **T** = T200 & L5

15 Firmware
- **1** = Process Heat
- **2** = Residential
- **3** = Boosting
- **4** = Re-Circulation
- **5** = ICXXX Temp Lockout**
- **6** = Process Heat & ICXXX**
- **7** = Residential & ICXXX**
- **8** = Boosting & ICXXX**
- **9** = Re-Circulation & ICXXX**

**Specify optional lockout temperature: _____

16 Language
- __ = English (blank)
- **F** = French

Installation Accessories

- ☐ **BSPP** = Stainless steel thread adapter converts NPT to BSPP (NEMA 4 or 4X only)
- ☐ **NONE** = None
- ☐ **PR** = Pressure and temperature relief valve
- ☐ **PRS** = ASME pressure relief valve, stainless steel
- ☐ **NONE** = None
- ☐ **YS** = Y-Strainer
- ☐ **YSS** = Y-Strainer, stainless steel
- ☐ **NONE** = None

Application Attributes (MANDATORY)

Coldest incoming water temperature (140F Max):_____ Minimum Flow:_____ Maximum Flow:_____ Set point temperature:_____

Delta T Calculation: Set Point Temperature - Coldest Incoming Water Temperature = _____ (Maximum Delta T for Application)

Asset Tag

- ☐ **00** None
- ☐ **01** 1 Asset Tag_____
- ☐ **02** 2 Asset Tags_____
- ☐ **03** 3 Asset Tags_____
- ☐ **04** 4 Asset Tags_____
- ☐ **05** 5 Asset Tags_____

☑ **Laars Tankless Water Heaters are built to customer specification and are therefore non-cancelable, non-refundable and non-returnable.**

Model Number Configuration

L	C	T	E	G											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Customer Signoff_____

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